

CLAIMS

WE CLAIM:

1. A magnetic lid sensor for a washing machine lid supporting a magnet, the sensor comprising:
 - a sensor housing mountable on the washing machine;
 - a magnet sensor element held within the sensor housing adapted to be
 - 5 displaced from a point of rest of the magnet when the washing machine lid is closed and the sensor housing is mounted on the washing machine; and
 - at least one ferromagnetic flux director held by the sensor housing and having a first end positionable near the point of rest of the magnet and a second end held near the magnetic sensor to conduct flux between the magnet and magnet
 - 10 sensor when the sensor housing is mounted on the washing machine.
2. The magnetic lid sensor of claim 1 wherein the sensor housing is a non-magnetic material.
3. The magnetic lid sensor of claim 1 wherein the magnet sensor is a reed switch.
4. The magnetic lid sensor of claim 1 including two ferromagnetic flux directors each having first and second ends positioned with their first ends flanking the magnet and their second ends flanking the magnet sensor to conduct magnetic flux in a loop between the magnet sensor and the magnet.
5. A lid lock assembly for a washing machine lid comprising:
 - a cap sized to cover a hole in the housing of a washing machine near a point of rest of the washing machine lid when the washing machine lid is closed, the cap including at least one downwardly extending hole;
 - 5 a lock housing having at least one mounting hole conducting a shaft of an upwardly extending screw receivable within the downwardly extending hole of the cap to compress the washing machine housing between an upper surface of the lock housing and a lower surface of the cap when the screw is tightened; and

10 a hook pivotable about an axis at a pivot point proximate to the mounting hole, the hook pivoting between a first position in which opening of the closed washing machine lid is prevented by interference between the hook and an engagement surface on the washing machine lid, and a second position in which the closed washing machine lid is free to open.

6. The lid lock assembly of claim 5 wherein the downwardly extending threaded hole is blind to present a continuous upper cap surface.

7. The lid lock assembly of claim 5 wherein the cap includes only a single downwardly extending hole and the lock housing includes only a single mounting hole for attaching the lock housing to the washing machine.

8. The lid lock assembly of claim 5 wherein the cap is an elastomeric plastic over a non-elastomeric plastic base the latter supporting the threaded hole.

9. The lid lock of claim 5 wherein the cap is non-magnetic and including a magnet sensor positioned within the lock housing near the mounting hole to receive magnetic flux from a magnet mounted on the washing machine lid through the cap and the hole in the washing machine housing.

10. The lid lock of claim 9 including two ferromagnetic flux directors each having first and second ends positioned with their first ends near the cap and their second ends flanking the magnet sensor to conduct magnetic flux from the cap to the magnet sensor.

11. A lid lock for a washing machine lid comprising:
a hook pivotable about an axis to move between a first position in which opening of the closed lid is prevented by interference between the hook and an engagement surface on the lid, and a second position in which the closed lid is free
5 to open; and
an actuator linked to the hook to move the hook between the first position and the second position;

wherein a contact interface between the hook and the engagement surface is selected to prevent a force urging an opening of closed lid from moving the hook to
10 the second position.

12. The lid lock as recited in claim 11 wherein the actuator operates alternately to move the hook toward and away from the second position.

13. The lid lock as recited in claim 11 wherein the actuator is a bi-directional solenoid.

14. The lid lock as recited in claim 11 wherein the engagement surface moves along a tangent line with movement of the closed lid to open and wherein the axis of the hook lies along the tangent line as extended in a direction opposite the direction of movement of the engagement surface.

15. The lid lock as recited in claim 11 wherein the engagement surface is an aperture in the lid and the hook engages the aperture.

16. The lid lock as recited in claim 15 wherein a portion of the hook engaging the aperture includes a central tooth entering the aperture and flanking shoulders resting against sides of the aperture when the tooth is so engaged.

17. A lid lock for a washing machine lid comprising:
a hook pivotable about an axis to move between a first position in which opening of the closed lid is prevented by interference between the hook and an engagement surface on the lid, and a second position in which the closed lid is free
5 to open;

an actuator linked to the hook to move the hook between the retraction position and the engagement position;

a spring mechanism communicating with hook for urging the hook toward the first position when the hook is proximate to the first position and urging the
10 hook toward the second position when the hook is proximate to the second position;
and

a contact set communicating with the hook to provide a switch output indicating when the hook is at the first position as distinguished from when the hook is in the second position.

18. The lid lock as recited in claim 17 wherein the actuator operates to alternately move the hook toward and away from the first position.

19. The lid lock as recited in claim 18 wherein the actuator is a bi-directional solenoid.

20. The lid sensing lock of claim 17 wherein the contact set provides a closed circuit between a first and second terminal when the hook is in the first position and an open circuit between the first and second terminals when the hook is in the second position.

21. The lid sensing lock of claim 17 wherein the contact set includes a sliding contact moving laterally over a stationary contact and wherein the stationary contact is positioned next to a cam surface engaging the sliding contact with overtravel of the sliding contact to lift the sliding contact transversely away from the stationary contact.

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